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Diffusion of Labeled Polyelectrolytes in an Unlabeled Polyelectrolyte Matrix Solution[1] PAUL RUSSO, RONGJUAN CONG[2], ELENA TEMYANKO, Louisiana State University — Fluorescence photobleaching recovery (FPR) was used to investigate the diffusion of fluoresceinamine-labeled poly(styrene sulfonate sodium salt) (LNaPSS, various molecular weights) in a matrix of unlabeled poly(styrene sulfonate sodium salt) (NaPSS, M_w = 990,000). FPR selectively monitors the optical tracer self-diffusion coefficient of LNaPSS (D). No long-term aggregates were detected. The matrix polymer slowed the self-diffusion of LNaPSS. When measuring D of LNaPSS with three different molecular weights over the same range of matrix concentration, the results depended on molecular weight of the LNaPSS. When the matrix concentration exceeded 20 mg/g of water, D was almost inversely proportional to molecular weight. In-situ dialysis FPR studies show that with the addition of salt, D decreases more dramatically with matrix than without matrix.

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